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ABSTRACT

A growing body of research supports a purposeful and transparent approach to learning. Within the field of cognitive science, learning is defined as a purposeful, goal-directed activity. An ongoing goal-setting process is integral to effective learning. Purposeful and transparent learning builds on learners' prior knowledge and experiences to construct new knowledge. Once learners' goals have been established, they begin a process of self-assessment. Purposeful and transparent learning means that learners monitor and assess their own progress. Metacognitive strategies help them to be mindful of what is being learned and what good performance looks like. The second half of this report presents three examples of program practices that support purposeful teaching and learning and that reflect the theoretical foundations of Equipped for the Future (EFF) . The examples illustrate how students use the EFF Framework to clarify their purposes for learning and identify strengths and gaps in the skills and knowledge necessary to achieve their purposes and goals; how teachers use the EFF Framework to structure a goal-setting/needs assessment dialogue with students; and how teachers use EFF as a common language to discuss how their instructional practice supports attainment of student goals and purposes. A glossary and list of 21 references are appended. (YLB)

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EFF Research Principle: A Purposeful and Transparent Approach to Teaching and Learning

EFF Research to Practice Note 1

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Equipped for the future

EFF Research Principle: A Purposeful and Transparent Approach to Teaching and Learning

By Marilyn K. Gillespie

What Do We Mean by a Purposeful and Transparent Approach?

The first key research principle underlying the Equipped for the Future system reform initiative emphasizes its purposeful approach to teaching and learning. Purposeful learning is integral to every step of the teaching and learning process. The first step in EFF-based instruction involves asking learners to examine their broad purposes for learning in relationship to their roles as workers, as parents and family members, and as citizens and community members. The **EFF Role Maps** and the **Common Activities** that encompass all three roles provide a common language to talk about these broader "big-picture" purposes. From this base, adults can identify more specific goals that will allow them to achieve those purposes. The **EFF Content Standards** provide a guide to the knowledge, skills, and learning strategies that learners will need to reach the goals. Teachers and learners then decide together on specific learning activities that will enable learners to strengthen their knowledge and skills in the EFF Standard or Standards that are most critical to achievement of their goals. This intentional and purpose-driven approach to planning creates the conditions for teachers to make explicit both what will be learned and what good performance will look like. In this way, the process and goals of learning are transparent to everyone involved.

Since the tools that make up the EFF Framework were developed through a broad national consensus-building process involving hundreds of adult learners, they connect individual learner goals to the broader, more fundamental purposes of the larger community. These include our National Goal for Literacy and Lifelong Learning, that ***every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.***

This *Research to Practice Note* summarizes the growing body of research that supports a purposeful and transparent approach to learning, including findings that demonstrate that:

- **Learning itself is a purposeful, goal-directed activity. An ongoing goal-setting process is integral to effective learning.**
- **Purposeful and transparent learning builds on learners' prior knowledge and experiences to construct new knowledge.**
- **Purposeful and transparent learning also means that learners monitor and assess their own progress. Metacognitive strategies help them to be mindful of what is being learned and what good performance looks like.**

The EFF publication *Results That Matter: An EFF Approach to Quality* presents five key principles that reflect the theoretical foundations of EFF. Program practices that support these principles provide guideposts by which programs, teachers, students, and their communities can assess their implementation of the EFF Framework. They help practitioners to better answer the questions "What does it mean to practice EFF?" and "What does EFF implementation look like in action?" These *Research to Practice Notes* will help you to:

- identify the research basis for the principles;
- learn key concepts and terms associated with the principles;
- see examples of how other programs have implemented the program practices;
- reflect on how you and your program can implement the program practices.

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How Cognitive Science Informs EFF

Researchers have recently made great progress in understanding how people think and learn. In the last few years, there has been an extraordinary growth in scientific work on the mind and brain. We now have ways to study not only the ***products*** of thinking and learning but also the ***processes*** by which people acquire new information, such as the neural processes that occur during thought and learning and the process through which people develop competence and expertise. The multidisciplinary group of researchers who have conducted this work have coined a term for the study of thinking and learning: ***cognitive science***. Cognitive science research represents one of the key conceptual underpinnings of the EFF Framework for teaching, learning, and assessment and provides the research basis for the constructivist theory of learning. For teachers who would like to read more about cognitive science research, the National Academy of Sciences has produced three publications that synthesize this work and its implications for education: *How People Learn: Brain, Mind, Experience, and School*, by Bransford, Brown, and Cocking (1999); *How People Learn: Bridging Research and Practice*, by Donovan, Bransford, and Pellegrino (1999); and *Knowing What Students Know: The Science and Design of Educational Assessment*, by Pellegrino, Chudowsky, and Glaser (2001).

What Research Says about Purposeful and Transparent Learning

Learning is a purposeful, goal-directed activity. Within the field of **cognitive science**, meaning is understood as something we impose on the world, rather than something that exists independently of ourselves. Beginning with Piaget, numerous researchers have demonstrated that human beings are, by nature, active problem solvers who seek out learning in order to make meaning of the world around them (Piaget, 1970; Bruner, 1986; Fosnot, 1992; Wenger, 1998). We undertake learning activities "not merely as ends in themselves but as means for achieving larger objectives and goals that have meaning in the community" (Scribner, 1987). Learning is a process of constructing new knowledge on the basis of our current knowledge to meet our socially determined purposes for learning (Glaser, 1992; Duffy & Jonassen, 1992).

Goal setting and persistence. In light of this research, more attention is now being given to involving students in setting their own goals for learning. Within adult education, the role of goal setting has been underscored by recent research on what helps adult literacy and English for Speakers of Other Languages (ESOL) learners to persist in adult education programs. As they followed adult learners over time, Comings, Parrella, and Soricone (2000) found that adults who were able to identify more clearly their purposes for learning, such as "help my children" or "get a better job," were much more likely to persist than those who either mentioned no specific purpose or simply said they were doing it for themselves. According to these researchers, learners who establish concrete goals and are given the opportunity to see that they are making measurable progress toward them are more able to persist in their efforts (and stay in programs) long enough to reach them.

Purposeful learning in the EFF Content Framework. Programs using EFF build on these research findings by helping learners to identify their purposes and goals for learning at multiple stages in the teaching and learning cycle. Like most programs, they ask learners to name their goals during initial program intake, but this is only the beginning of a more extensive goal-setting process. Students are introduced to the EFF Framework, including the four **Purposes for Learning**, the Role Maps, and the Common Activities. These provide a common language to help learners create a detailed "big picture" of their underlying purposes for learning. For example, students who name "getting my GED" are encouraged to look beyond passing the test to examine the goals it will help them to reach. If their goals are within the worker role, they may explore the need for postsecondary job training and then use the EFF Standards Wheel to determine that they need to develop skills in the Content Standards *Plan* and *Learn Through Research* to get into and succeed in community college. In a group learning situation, the group members work to reach a consensus on shared priorities. Together with their teacher, they then plan learning activities

For reflection...

- *What kind of goal setting takes place within your program?*
- *How are your students involved in setting the goals and activities they will work on?*

that will help them work on those goals. At this stage, learners also become involved in the identification of what good performance related to their goals will look like. In this manner, activities become learner driven, transparent, and purposeful.

Purposeful learning builds on learners' prior knowledge.
Cognitive research has shown that learning is not simply a process of "knowledge acquisition" but an active process of "knowledge construction" in which learners use their prior knowledge and experience to shape meaning and construct new knowledge (Lambert & Walker, 1995). (See *Research to Practice Note 2* for more details on constructivist teaching and learning.) Teachers need to activate the **prior knowledge** of learners by helping them to articulate what they already know about a given topic and build on these ideas in ways that help students achieve a more expert understanding. For example, research with children has shown that when many young students are taught that the earth is round, they often do not fully grasp this new information. Many hold onto a **mental model** of the earth as flat by imagining a round earth to be shaped like a pancake (Vosniadou & Brewer, 1989). Only when teachers directly address learners' prior knowledge of the earth as being flat are they able to help students develop a more complete understanding of the shape of the earth. If teachers do not involve learners in naming and analyzing those prior conceptions, research shows that students may fail to grasp the new concepts or may learn them for a test but revert to their preconceptions outside the classroom (Donovan, Bransford, & Pellegrino, 1999).

Goal setting and self-assessment. Within the EFF teaching and learning cycle, once learners' goals have been established, they begin a process of self-assessment in relation to the EFF Content Standard they have decided to work on. They may first use brainstorming or other techniques to name and validate, as individuals and as a group, what they already know. This process helps them to begin to examine and revise their existing mental models of the subject matter. For example, learners who think writing is mostly about "spelling all the words right" may learn that spelling is only one part of a much larger writing "process."

For reflection...

- *How could you use the EFF Framework to begin to work with students with limited literacy skills?*
- *In what ways do you find out about the prior knowledge of learners you teach? How might you use the EFF Framework to help to draw on and address their prior knowledge?*

Purposeful and transparent learning means that learners monitor and assess their own progress.
A purposeful and transparent approach to teaching and learning requires that learners have a clear understanding of the purposes for each learning activity and monitor their own progress. For example, the Standard *Listen Actively* includes monitoring comprehension and integrating information from listening with prior

In *Other People's Words: The Cycle of Low Literacy* (1995), Purcell-Gates chronicles the story of what can happen when literacy learning is divorced from broader purposes and everyday roles. Jenny, a white urban Appalachian mother, came to Purcell-Gates for help with literacy for herself and her son. At 31, she and her husband had created a full life for themselves, but one in which literacy played very little part. When Purcell-Gates met her, Jenny had been attending adult education classes off and on for four years. She showed Purcell-Gates her books, which contained short reading passages, comprehension questions, and fill-in-the-blank exercises. Although she was able to read workbooks written at the fourth-grade reading level, she had transferred none of this knowledge to her everyday life. She had never written anything on her own, for her own purposes, besides her name, a few notations on the calendar, and her address. When Purcell-Gates suggested to Jenny that she write in a journal and read her own writing, "She looked at me with an expression of stunned awareness. 'Why, I ain't never read my own words before!' she exclaimed softly...'That's all I ever really did was copy stuff, you know, from a book.'"

I found I had to be much more keenly aware of where my learners began and then where they are now. I felt much more in touch with what my learners needed (time to reflect or for the peer leadership that occurred) and felt more like it was a respected classroom. I've always been unsure of what student-centered is, and then this summer's group really showed me how the balance needs to happen between teacher and learner. This process also has made me understand how important it is to know where the learner begins through observation or through learner assessment. I used their strengths to plan and incorporate discussions where before I wouldn't have been as aware of the process the learners were going through, and I worried more about how I was doing rather than how they were progressing.

—Jennifer Ladd, Atkinson, Maine

This task was successful because the students inspired it. They were invested in this activity [writing to request funds for community service]. They were hopeful we would see results. They could see the value in learning to write a business letter, and most of them felt they would be able to write letters on their own in the future... The students would pepper me with questions about our project. They wanted to know if I'd sent the letters or if I'd heard any response. They were talking about it every day.

—Joanna Elizondo, Seattle, Washington

For reflection...

- *Think about your own metacognitive processes. What kinds of strategies do you use to monitor and assess your own learning as a teacher?*
- *Look at the Components of Performance for several EFF Standards. How is metacognitive awareness built into the language of the components?*

knowledge to address the listening purpose. One way teachers help learners to do this is by improving their awareness of metacognitive processes of learning.

The importance of metacognitive awareness. Metacognition refers to our capacity to be aware of our own thinking processes and to monitor and control our thinking relative to the cognitive tasks we are performing (Greeno, Resnick, & Collins, 1997). For example, you are using your metacognitive skills when you monitor your understanding while you are reading, when you go back and reread passages you don't understand, and when you decide when and under what conditions to consult a dictionary. Cognitive research has demonstrated that most experts have strong metacognitive skills in relation to their field of expertise. They make "mental notes" when they need more information. They observe whether what they are learning is consistent with what they already know, and they monitor what they are learning to see whether it meets their purposes (Bransford, Brown, & Cocking, 1999).

Metacognitive strategies can be taught. Since metacognition often takes the form of an internal dialogue, until recently it was assumed that individuals simply had to develop this capability on their own. Today, however, new research tools are available that allow researchers to closely monitor what experts do and think as they work. It is now clear that the kinds of metacognitive skills that experts in a given subject area use can be identified. New approaches to teaching these metacognitive strategies to novices are being developed every day (Bransford, Brown, & Cocking, 1999).

The EFF Framework is designed to help students develop their metacognitive awareness by making the metacognitive aspects of learning transparent. Metacognitive skills associated with "good performance" are written into the Components of Performance for the EFF Standards. Students begin their work on a Standard by identifying what they already know about the topic. Next, they closely examine what good performance looks like. They develop their own learning checklists so they can plan and monitor their understanding as they are practicing new skills. They also learn how to evaluate how well they are performing in relation to the Standard through the use of scoring guides they help to develop, teacher interviews, portfolios, and other learner-centered assessment tools. (See *Research to Practice Note 2* for more information about metacognitive strategies.)

Program Practices That Support Purposeful Teaching and Learning

Results That Matter: An Approach to Program Quality Using Equipped for the Future (Bingman & Stein, 2001) provides a vision for program-level system reform (referred to as the EFF Quality Model). The EFF Quality Model identifies Program Practices that reflect the theoretical foundations of EFF and provides a guidepost by which administrators, teachers, students, and communities can assess their implementation of the EFF Framework. As you reflect on the examples below, think about how your program might answer the questions "What does it mean to practice EFF?" and "What does EFF implementation look like in action?"

EXAMPLE 1:
Students use the EFF Framework to clarify their purposes for learning and to identify strengths and gaps in the skills and knowledge necessary to achieve their purposes and goals.

During their intake process, adult ESOL learners often identify goals related to communicating in their family and community life. A common concern is using English when one "goes to the doctor." Alysan Croydan, a teacher from the Refugee Women's Alliance of Seattle, Washington, describes how the EFF Framework helped her to delve more deeply to understand students' specific needs related to obtaining medical care.

After Alysan's students expressed the need to improve their ability to make appointments with doctors, they began working on the EFF Standard *Speak So Others Can Understand* by practicing dialogues in English. After they finished the activity, Alysan was surprised when many students continued to name making appointments with doctors as their goal. Using the EFF Framework, she asked them to reflect on what was still difficult about making an appointment. It became clear that the real issue was not just making an appointment, but finding a time that would fit their work and childcare schedules. Going beyond the scripted dialogues, she began teaching them how to negotiate an appointment time and troubleshoot scheduling problems.

This activity might lead Alysan and her students toward work on other EFF Standards. For example, they might use the EFF Standard *Solve Problems and Make Decisions* to improve their skills related to addressing scheduling problems. The Components of Performance for this Standard guide students to anticipate or identify problems; use information from diverse sources to arrive at a clearer understanding of the problem and its root causes; generate alternative solutions; and select an alternative that is most appropriate to goal, context, and available resources. Depending on their needs, the students might decide to move on to another EFF Standard, such as *Advocate and Influence*, in order to work with their employers to allow for time off for doctor visits.

A close investigation of students' complex purposes for learning using the EFF Standards not only helped Alysan to better understand their needs, but also helped to clarify what needed to be learned. As what they needed to learn became clear, they were better able to judge their own progress toward reaching their goals.

For reflection...

Look at the Components of Performance for each of the EFF Standards.

- *What is the common thread of purposeful learning in each one?*
- *How do the other components in each Standard build on the initial naming of a real-life purpose or goal?*

EXAMPLE 2:
Teachers use the EFF Framework to structure a goal-setting/ needs-assessment dialogue with students.

Gail Hemsoth of Lane Community College in Eugene, Oregon, teaches adults in a local welfare to work program. After a discussion of the EFF Standards, these students decided that they wanted to think more about how to develop skills related to the Standard *Speak So Others Can Understand.* With Gail's help in simplifying the language, they looked over the Components of Performance for this Standard: Determine the purpose for communicating; Organize and relay information to effectively serve the purpose, context, and listener; Pay attention to conventions of oral English communication, including grammar, word choice, register, pace, and gesture in order to minimize barriers to listener's comprehension; and Use multiple strategies to monitor the effectiveness of the communication. Then they worked in small groups to brainstorm examples of tasks from their own lives where they needed to use these skills. Overnight, Gail compiled the task examples from all the groups and the next day asked the groups to rank the tasks in order of difficulty. When they finished, each learner established his or her own goals related to the Standard. For example, one woman was going to be starting a job soon in which she would have to give presentations on domestic violence. Another woman wanted to speak more confidently at job interviews.

Once the group became clear on their own personal goals, they began thinking about how they could plan a common activity that would allow them all to work together on the Standard. All the students recognized that they needed more practice in speaking in front of a group. They decided that since almost everyone also needed to spend more time identifying jobs that would interest them, they would combine these two goals by researching interesting jobs and then making a presentation about what they learned to the whole class.

Together they discussed what a good oral presentation to the class would look like. They discussed how to tailor their talk to their audience, how they would know if they were being understood, and whether or not to use the overhead projector or handouts. Then they created a checklist that the audience would use to evaluate the presentation. After everyone was done, they reflected individually and as a group about what they had learned and what they would do next in order to become more expert at speaking-related tasks.

For reflection...

- *How might the experiences of learners in Gail's program have been different if she had simply assigned them the task of making presentations about jobs on the first day of class rather than asking them to decide on the activity?*
- *How do you help learners to come to consensus about learning activities they can work on together?*

EXAMPLE 3:
Teachers use EFF as a common language to discuss how their instructional practice supports attainment of student goals and purposes.

Program administrator Jane Knight of Knox County Adult Literacy Program in Knoxville, Tennessee, describes how she and the teachers in her program used the framework as a common language to solve problems. Over Christmas break, Jane was able to set aside four weeks for the team to learn about EFF and create an action plan. At first, teachers felt a bit overwhelmed and worried about what changes would be required, but over time they learned to use the EFF tools and became more confident. Bringing on new teachers, however, was sometimes harder. For example, in one class, made up of ex-offenders, there had been a lot of teacher turnover. The students came to Jane with a list of complaints they felt the new teacher, who had been in the class for only four days, had not solved. Jane and another teacher experienced with EFF decided to visit the class. They

encouraged the students to use the Standard *Solve Problems and Make Decisions* to work on their concerns. Students began to speak up about how difficult it was for them to make it to the bus on time because they had to take their children to school. If they missed the bus, the next one did not come until an hour later. As ex-offenders, these learners were required to report their attendance to the court system. Being late resulted in a penalty. As they worked together to generate alternatives, the students were able to see how, if everyone compromised a little, an effective solution could be found. This was a pivotal event for the students, the new teacher, and the program. The students began to see that they were part of a programwide community with their own set of responsibilities. The new teacher was able to see how EFF worked in action. Growing out of this experience, the program decided to hold monthly Town Meetings where the students and staff could discuss programwide issues.

For reflection...

- *How could your program use EFF as a common language to plan and discuss your educational practices?*

Glossary

Cognitive science: The study of thinking and learning, currently being contributed to by researchers in a wide variety of disciplinary and multidisciplinary fields from developmental psychology to medicine. (See Bransford, Brown, & Cocking, 1999.)

Common Activities: The term EFF uses to refer to those activities that adults perform in all three roles (worker, family member, community member). The EFF team identified the 13 Common Activities by looking across the Broad Areas of Responsibility, the Key Activities, and the Role Indicators for each Role Map. (See Stein, 2000, p. 14; Merrifield, 2000, pp. 33-34.)

Content Standards: The term used in a variety of fields to describe what individuals need to know and be able to do for a particular purpose. In EFF, the 16 Content Standards identify what adults need to know and be able to do in order to meet their goals for learning and to be effective in their adult roles. Each EFF Content Standard consists of the title of the standard and the Components of Performance for that standard. (See *EFF Standards*, Stein, 2000, pp. 19-20.)

EFF Quality Model: A vision of what system reform at the program level looks like using EFF Standards. The EFF tools, foundational theory and research, expected program practices, and predicted short- and long-term outcomes are presented and explained in the publication *Results That Matter: An Approach to Program Quality Using Equipped for the Future* (Bingman & Stein, 2001). Ordering and downloading information can be found at http://www.nifl.gov/lincs/collections/eff/eff_publications.html.

Mental model: An individual's existing understanding and interpretation of a given concept, which is formed and reformed on the basis of experiences, beliefs, values, sociocultural histories, and prior perceptions (Lambert & Walker, 1995, p. 1). Our mental models (or schemas) affect how we interpret new concepts and events.

Metacognition: The capacity to reflect on one's own thinking (Greeno, Resnick, & Collins, 1997, p. 19). Metacognitive strategies include monitoring our thinking and understanding while we work, checking to see if what we are learning is consistent with what we already know, and making analogies that will help our understanding (Bransford, Brown, & Cocking, 1999).

National Education Goal 6: One of the National Education Goals identified by the 50 governors and President George Bush at an education summit in 1989 and later enacted by Congress as part of the Goals 2000 Act. Goal 6 is the only goal directly related to adult learning and is often referred to as the Adult Literacy and Lifelong Learning Goal. A congressional mandate to measure progress toward Goal 6 was the impetus for the development of EFF. (See Stein, 2000, pp. 5-7.)

Prior knowledge: The knowledge one already has about a given topic. Prior knowledge may include accurate as well as inaccurate preconceptions about how the world works. Activating learners' prior knowledge about a topic and involving them in revising or building on it is an essential step in effective learning. (See Hartman, 2001.)

Purposeful approach to education: Teaching and learning that is designed specifically around the goals and purposes of students in their real-life roles as family members, community

members, and workers. A purposeful approach assumes intentionality, explicitness, and transparency in the learning environment. The EFF Standards contribute to purposeful learning because they make explicit and transparent the skills adults need to meet their goals and purposes. (See Bingman & Stein, 2001; Merrifield, 2000, p. 9.)

Purposes for Learning: The four fundamental purposes that adults offer as reasons for furthering their literacy education. The four Purposes for Learning are (1) Access and Orientation, (2) Voice, (3) Independent Action, and (4) Bridge to the Future. These purposes drive learning across the different contexts of adult life and capture the social and cultural significance of learners' specific, individual goals (Merrifield, 2000, pp. 13-17). (See Stein, 1995; Stein, 2000, pp. 5-6.)

Role Map: A publicly agreed to, explicit, consensus depiction of the adult roles of worker, parent/family member, and citizen/community member. For each adult role, the Role Map provides definitions of the Broad Areas of Responsibility, Key Activities, and Role Indicators, which describe, not prescribe, effective performance in the role. (See Stein, 2000, pp. 8-13.)

Transparent approach: An approach to teaching and learning in which the goals and purposes of learning, what will be learned, and what good performance looks like are clear and explicit to students, teachers, administrators, and other stakeholders. The EFF Standards are important in this approach because they clearly define the skills adults need to meet their goals and purposes.

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